

**ABSTRACT**

In a method and a computer program product for designing a component for an industrial plant, in particular a thick-walled component for a power plant, by means of an iteration, in which  
5 the steps of

- computing a plurality of process variables by means of a process simulator;
- modelling growth of at least one hypothetical crack in the component, based on a structure of the component and the  
10 process variables;
- computing a life expectancy for the component by determining a time required for a dimension of the hypothetical crack to exceed a given critical limit;
- modifying the structure of the component;

15 are repeated until the time required for the crack dimension to exceed the given critical limit fulfils a pre-determined requirement, a time dependent load-profile and a dynamic process simulator capable of modelling transient process behaviour is used to compute the process variables.

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